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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,037	01/28/2004	Koichiro Nakazawa	03500.017851	9610

5514 7590 06/30/2006

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NEW YORK, NY 10112

EXAMINER

MARTIN, LAURA E

ART UNIT PAPER NUMBER

2853

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/765,037	Applicant(s) NAKAZAWA ET AL.	
	Examiner Laura E. Martin	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. (US 2002/0041310) in view of Kubota et al. (US 6086197) and Koitabashi et al. (US 6494569).

Kaneko et al. teaches the conditions for ejecting the reaction liquid in the ejection step or the conditions for ejecting the reaction liquid to a prescribed area on the recording medium when at least the recording duty of the ink in the prescribed area is 100% satisfy the relationship of

$$55 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)} \leq \text{duty}(\%) \leq 125 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)}$$

wherein Vd (pl) is an ejection volume per dot of the reaction liquid, Rx (dpi) is a print resolution in the direction of the relative scanning Ry (dpi) is a print resolution in the arrangement direction of the nozzles [0151-0153], and duty (%) is a recording duty of the reaction liquid [0171].

Kaneko et al. does not disclose ejecting the pigment ink having a surface tension lower than that of the reaction liquid to the reaction liquid ejected on the surface of the

recording medium and filming a filmy aggregate by gathering of agglomerates at an interface where the reaction liquid has come into contact with the pigment ink. Kaneko also does not teach a pigment ink containing the surfactant in a higher content than that in the reaction liquid.

Kubota et al. discloses a pigment ink having a surface tension lower than a reaction liquid (column 12, line 33-column 13, line 20). Kubota et al. also teaches a pigment ink (ink A1) having a surfactant content higher than a reaction liquid (reaction solution A2) (column 12, lines 33-67).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink of Kaneko et al. with the disclosure of Kubota et al. in order to provide for a clear picture.

Koitabashi et al. teaches forming a filmy aggregate by gathering of agglomerates at an interface where the reaction liquid has come into contact with the pigment ink (column 1, lines 35-39 and column 3, lines 3-5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink of Kubota et al. with the disclosure of Koitabashi et al. in order to improve image quality.

Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koitabashi et al. (US 6494569) in view of Kaneko et al. (US 2002/0041310).

Koitabashi et al. teaches an ink-jet recording process for conducting recording by ejecting a pigment ink and a reaction liquid containing a polyvalent metal salt from a

Art Unit: 2853

recording section (column 6, lines 62-65), in which a plurality of nozzles for ejecting the pigment ink and reaction liquid are arranged, to a recording medium while relatively scanning the recording section to the recording medium (column 16, lines 28-35), the process comprising the steps of: ejecting a reaction liquid to the recording medium (column 6, lines 65-67) and ejecting the pigment ink to the recording medium in such a manner that the pigment ink is brought into contact with the recording liquid present in a liquid state on the surface of the recording medium (column 7, lines 1-5); bringing the pigment ink into contact with an interface of the reaction liquid present on the surface of the recording medium (column 7, lines 1-5) and forming a filmy aggregate by gather of agglomerates at the interface where the reaction liquid has come into contact with the pigment ink (column 1, lines 35-39 and column 3, lines 3-5); and accelerating the penetration of the reaction liquid with respect to the recording medium (column 6, lines 3-12).

Koitabashi et al. does not teach the conditions for ejecting the reaction liquid in the ejection step or the conditions for ejecting the reaction liquid to a prescribed area on the recording medium when at least the print duty of the ink in the prescribed area is 100% satisfy the relationship of

$$55 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)} \leq \text{duty}(\%) \leq 125 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)}$$

wherein Vd (pl) is an ejection volume per dot of the reaction liquid, Rx (dpi) is a print resolution in the direction of the relative scanning Ry (dpi) is a print resolution in the arrangement direction of the nozzles, and duty (%) is a print duty of the reaction liquid.

Art Unit: 2853

Kaneko et al. teaches the conditions for ejecting the reaction liquid in the ejection step or the conditions for ejecting the reaction liquid to a prescribed area on the recording medium when at least the print duty of the ink in the prescribed area is 100% satisfy the relationship of

$$55 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)} \leq \text{duty}(\%) \leq 125 \times \frac{0.85 \times 10^6 \times Vd(pl)^{-0.61}}{Rx(dpi)Ry(dpi)}$$

wherein Vd (pl) is an ejection volume per dot of the reaction liquid, Rx (dpi) is a print resolution in the direction of the relative scanning Ry (dpi) is a print resolution in the arrangement direction of the nozzles [0151-0153], and duty (%) is a print duty of the reaction liquid [0171].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the ink of Koitabashi et al. with the disclosure of Kaneko et al. in order to improve print quality.

Response to Arguments

Applicant's arguments with respect to claims 1-2 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments with respect to claims 3-8 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that, while Kaneko et al. discloses for an ink that satisfy the claimed equation, ink is not synonymous with a reaction liquid. Examiner would like to

Art Unit: 2853

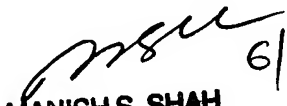
point out the reference, Takemoto et al., which discloses a reaction liquid that is colored in column 7, lines 37-41. It would have been obvious that one could use a reaction liquid as a coloring solution, thus the conditions held by the ink taught by Kaneko et al. meet the claims as recited.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Laura E. Martin

 6/22/06
MANISH S. SHAH
PRIMARY EXAMINER